

Science and Technology

EnergyTech



Atomic Nucleus

An atom is made of three sub-atomic particles: protons, neutrons, and electrons. The protons and neutrons are found in a nucleus at the center of the atom. The protons and neutrons have roughly the same weight, and they make up virtually all of the mass of the atom—the electron is barely noticeable. When atoms combine to form different molecules (a chemical change), the electrons clouds interact, but the nuclei remain separate.

In a nuclear change, the nucleus itself changes. For many years, scientists assumed that nuclear changes were not possible. For this assignment, we will use this old assumption as we learn what is inside the nucleus of the atom.

You can find some information on the Periodic Table of the Elements on the back of this sheet. As you fill in the following table, remember:

- the “Atomic Number” is the same as the “Number of Protons”;
- the “Mass Number” is the same as the “Number of Protons” + “Number of Neutrons”;
- the “Isotope Name” is the “Symbol” followed by the “Mass Number”.

Element	Symbol	Atomic Number	Mass Number	Number of Protons	Number of Neutrons	Isotope Name
Aluminum	Al		27	13		Al-27
Hydrogen	H	1			0	H-1
Hydrogen	H		2			
Hydrogen		1			2	
Helium	He		4		2	
Uranium		92				U-235
Uranium	U		238			
Thorium			234			
Barium						Ba-137
Lead	Pb				125	
Radium	Ra			88	140	
Strontium		38	90			
Plutonium						Pu-242
Carbon			14			
Krypton	Kr	36	84			